



GA4 2814

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Leonard Forbes et al.

Title: CIRCUITS WITH A TRENCH CAPACITOR HAVING MICRO-ROUGHENED SEMICONDUCTOR SURFACES (as amended)

Docket No.: 303.389US2

Serial No.: 09/467,992

Filed: December 20, 1999

Due Date: N/A

Examiner:

Group Art Unit: 2814

3'12/B

12-10-00

Payton

Assistant Commissioner for Patents
Washington, D.C. 20231

We are transmitting herewith the following attached items (as indicated with an "X"):

- X A return postcard.
- X A Supplemental Preliminary Amendment (4 Pages).
- X A check in the amount of \$312.00 to cover the fee for additional claims as calculated below.

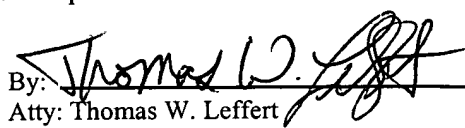
If an additional fee is required due to changes to the claims, the fee has been calculated as follows:

| CLAIMS AS AMENDED | | | | | | |
|---|--|---|--|-------------------------|--------|----------|
| | (1) Claims Remaining After Amendment | | (2) Highest Number Previously Paid For | (3) Present Extra | Rate | Fee |
| TOTAL CLAIMS | 20 | - | 20 | | x 18 = | \$0.00 |
| INDEPENDENT CLAIMS | 7 | - | 3 | 4 | x 78 = | \$312.00 |
| [] MULTIPLE DEPENDENT CLAIMS PRESENTED | | | | | | \$0.00 |
| TOTAL | | | | | | \$312.00 |

Please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional required fees or credit overpayment to Deposit Account No. 19-0743.

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described above, are being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on this 7 day of April, 2000.

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938, Minneapolis, MN 55402 (612-373-6900)

By: 
Atty: Thomas W. Leffert
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S/N 09/467,992

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Leonard Forbes et al.

Examiner: Unknown

Serial No.: 09/467,992

Group Art Unit: 2814

Filed: December 20, 1999

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Title: CIRCUITS WITH A TRENCH CAPACITOR HAVING MICRO-ROUGHENED
SEMICONDUCTOR SURFACES (as amended)



SUPPLEMENTAL PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

#3 1/2 / B
12-10-00
Payton

Before taking up the above-identified application for examination, please enter the following amendments.

IN THE TITLE

Please change the Title to read, --CIRCUITS WITH A TRENCH CAPACITOR
HAVING MICRO-ROUGHENED SEMICONDUCTOR SURFACES--.

IN THE CLAIMS

Please add the following new claims:

31. (New) A memory cell, comprising:

a lateral transistor formed in a layer of semiconductor material outwardly from substrate, the transistor including a first source/drain region, a body region and a second source/drain region; and

a trench capacitor formed in a trench and coupled to the first source/drain region; wherein the trench capacitor includes a polysilicon plate formed in the trench that is coupled to the first source/drain region, a second plate formed by the substrate with a surface of the substrate in the trench roughened by etching a polysilicon material on the surface of the substrate, and an insulator layer that separates the polysilicon plate from the roughened surface of the substrate.

32. (New) The memory cell of claim 31, wherein the second plate comprises a heavily doped p-type silicon substrate.

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